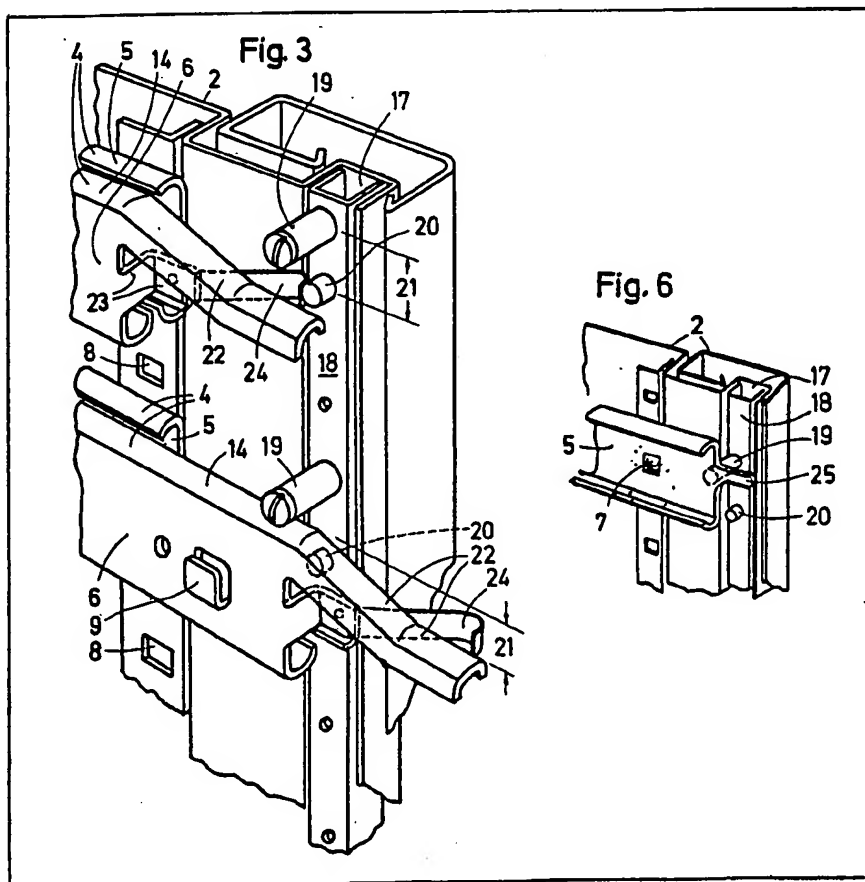


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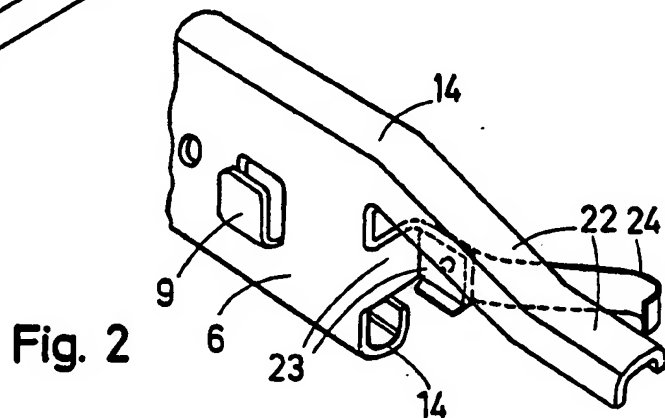
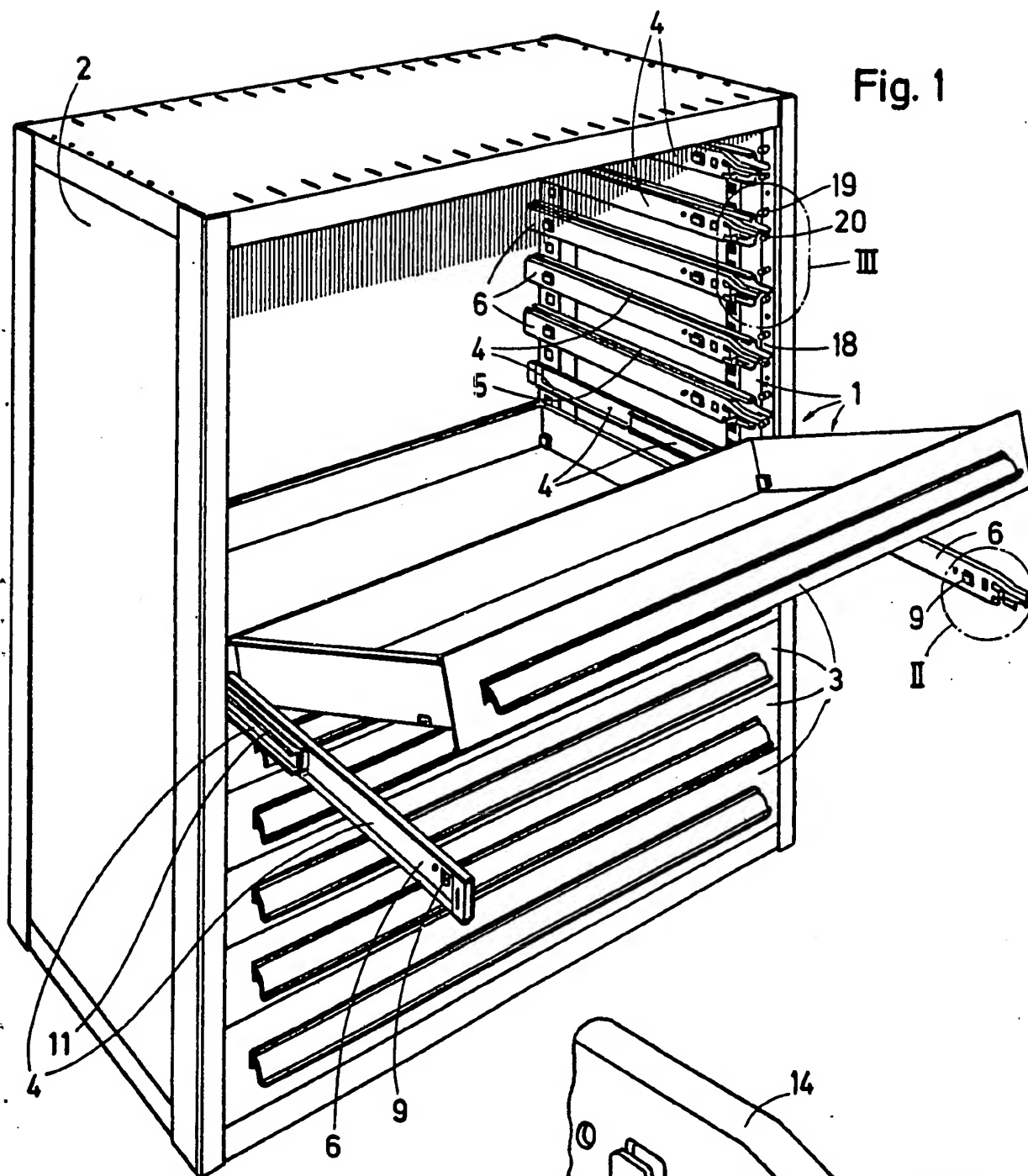
(54) Interlocking drawers

(57) A cabinet has a plurality of drawers one above the other each being moveable in and out by means of telescopic double pull-out units with ball guideway. An interlocking mechanism is provided to prevent more than one drawer being open at a time. The interlocking is provided by bar 18, biased downwardly by its own weight and bearing a control cam 19 and a locking stop 20 for each

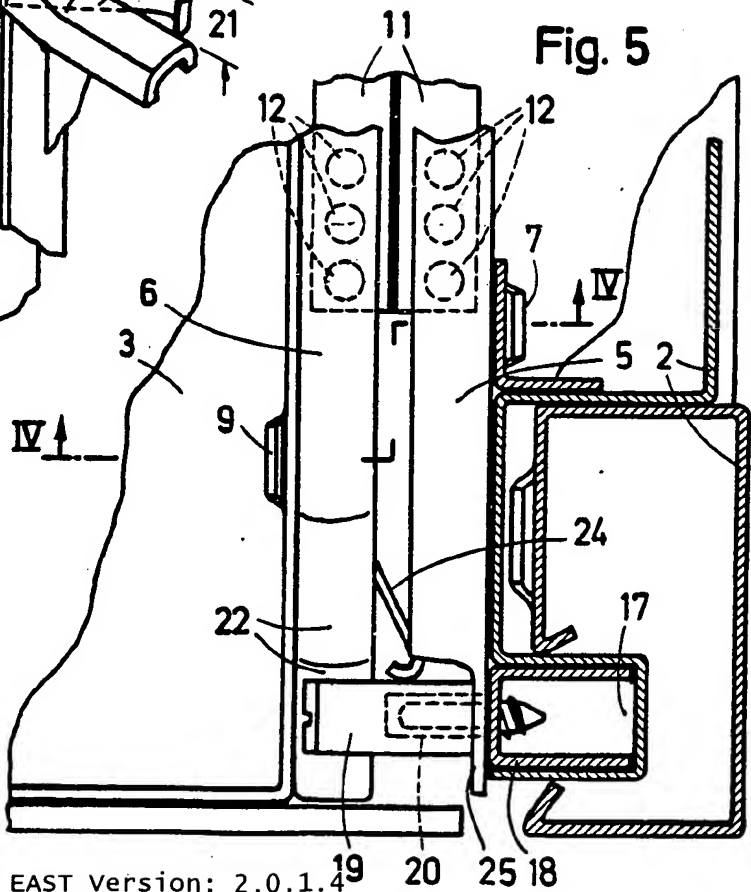
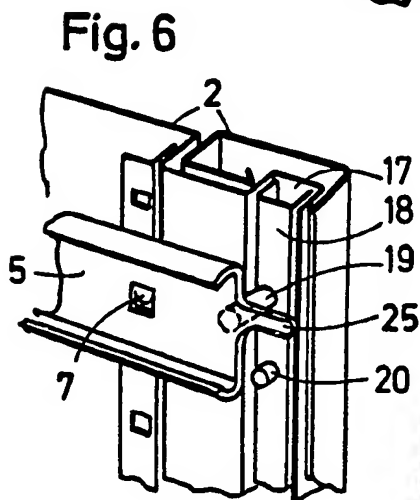
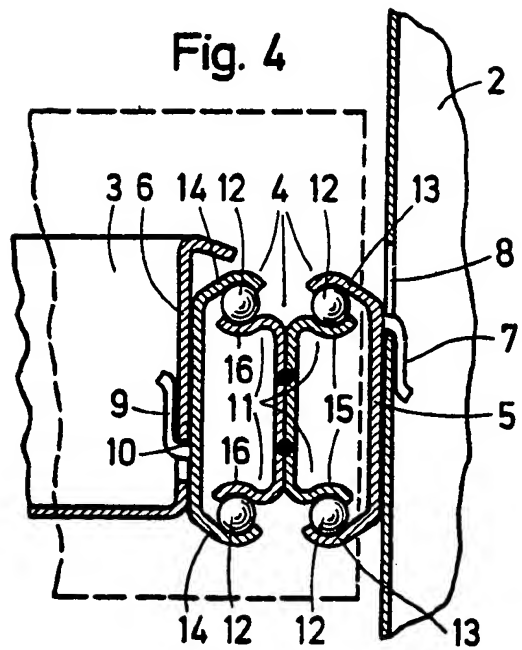
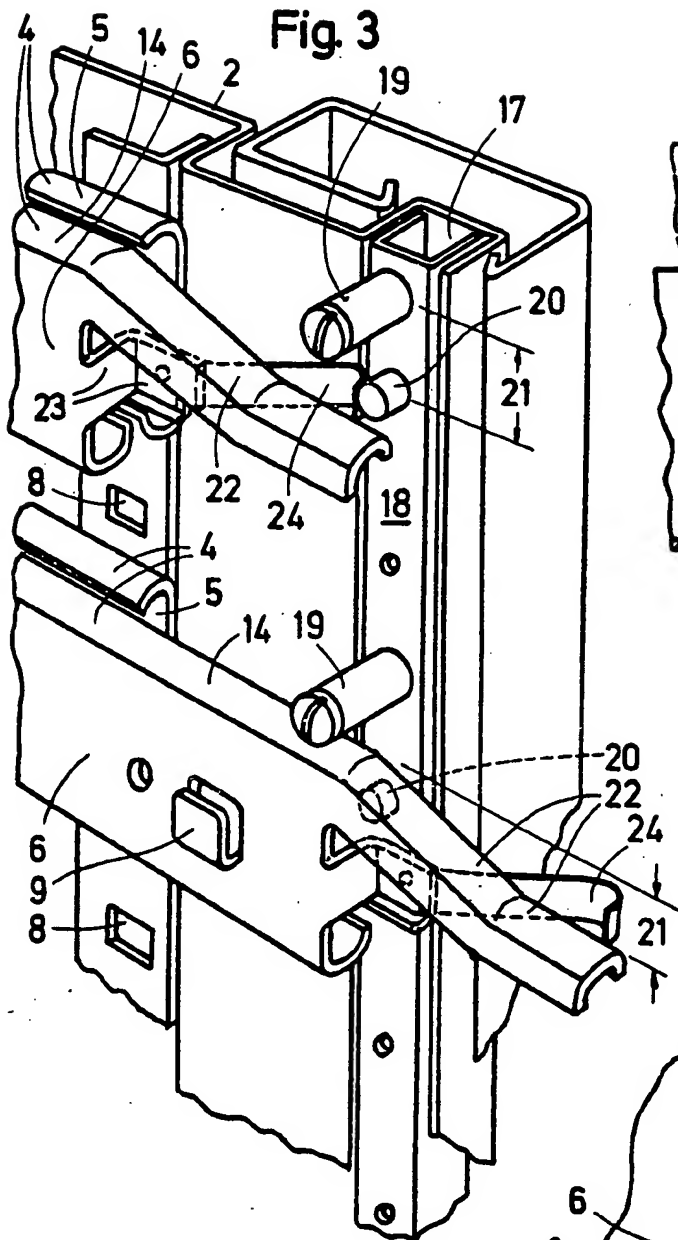
drawer. The rail 6 of the ball guideway 4, attached by hook 9 to the drawer, is provided with a nose 22, cranked in the plane of movement, which contacts cam 19 to lift bar 18 as the drawer is opened. This positions a stop 20 in front of a spring tongue 24 projecting from each of the other rails 6 to prevent opening movement thereof. The resilience of tongue 24 allows a partly open drawer to be completely shut. Bar 18 is retained in recess 17 by extension 25 of fixed guide rail 5.



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SPECIFICATION

Cabinet or the like with a relatively large number of drawers arranged one above the other

5 The improvement relates to a cabinet or the like with a relatively large number of drawers which are arranged one above the other and of which each is held so that it can be moved in and out by two telescopic double pull-out units with ball
10 guideways in the housing. Provided in the housing in this case is a pull-out locking means, which consists of at least one control rail adjustable transversely of the direction of movement of the drawers and having control cams and locking
15 cams for each drawer and also of control surfaces and locking abutments or stops movable with each drawer. The control rail, by the opening of a drawer, is displaceably arranged above the control surfaces and control cams associated with the
20 said drawer and is adjustable with its locking cams before the locking stops of all other drawers.

Cabinets or the like of the type as indicated, which are equipped with so-called pull-out locks for the drawers, are already known from the prior
25 art. In these latter, however, the purpose of the pull-out locks is to ensure that always only a single drawer in the cabinet or the like is capable of being opened. It is intended hereby to prevent excessive weight displacements, which could case
30 an undesirable tilting of the cabinet or the like.

With the use of simple telescopic guideways as supports for the drawers, the arrangement and construction of the pull-out lock does not present any relatively serious difficulties, because in such
35 cases the control surfaces and locking stops can in fact be produced by suitable "trimming" at the forward ends of the inner telescopic rails which are supporting the drawers. With the simple telescopic guideways, the inner telescopic rails
40 supporting the drawers are in fact still located comparatively close to the side walls of the cabinet housing and are thus able easily to come into an operative connection with the control
45 cams and locking cams of the control rail which is guided therein.

A shown in practice, however, considerable problems have been met as regards a stable and thus functionally reliable development of the pull-out lock, in those cases where the drawers are
50 supported so as to be able to be moved in and out in the housing of the cabinet by the use of telescopic double pull-outs having ball guides. As a result of the duplicated ball slides interposed in this case between the outer telescopic rail and the
55 inner telescopic rail, there is produced for the telescopic double pull-outs an assembly thickness which is at least twice as large as the assembly thickness which is at least twice as large as the assembly thickness of the normal telescopic
60 guideways. The greater distance occurring as a result thereof between the control rail guided in the housing of the cabinet or the like and the control surfaces and locking stops or abutments which are respectively on the drawers and inner

65 ball-guiding rails of the telescopic double pull-out means consequently make it necessary to have a substantially more stable construction of the individual functional parts for the purpose of guaranteeing the necessary functional reliability.

70 In particular, the sufficiently stable development of the control surface and locking stops has in such cases proved to be difficult and costly.

The invention seeks to find a dimensional form for a pull-out lock in cabinets or the like with a
75 relatively large number of drawers which are arranged one above the other, which form, at low cost, guarantees a high stability and thus functional reliability, even in the event of robust stressing.

80 We have found that this can be primarily obtained by the fact that at least one of those inner ball-guiding rails which carry a drawer comprises, at its forward end, firstly, as an extension of a ball-guiding channel, a shaped
85 extension as a control surface which is cranked in its guiding plane and, secondly, is provided with a tongue cranked sideways from its guiding plane as a locking stop.

The essential advantage consists here in that
90 the control surface and locking stops can be made in one piece with the inner ball-guiding rail and, at the same time, have a high dimensional stability.

It has proved to be advantageous, according to a preferred form of the invention, if the cranked
95 extension forming the control surface is given a snout-like or trunk-like form. In this case, the cranked extension may comprise a downwardly open channel-like or U-shaped section, while the tongue forming the locking stop consists of a rigid
100 angle member lying substantially within the plane of the inner ball-guiding rail and a leaf spring which is connected fast to the said member, projects laterally towards the ball-guiding rail, but is capable of yielding sideways towards the inner
105 ball-guiding rail.

By this development, not only is there produced a construction of the extension forming the control surface which is dimensionally stable in any
110 direction of stress, but it is also possible for a drawer which is only approximately in its closed position to be subsequently forced into the final — locked — closed position, if another drawer is located in its opening position.

One preferred feature as regards the
115 development of the pull-out lock in accordance with the invention is also to be seen in the fact that the control cams of the control rail have a larger length dimension than the locking cams thereof.

120 According to another preferred feature of the invention which constitutes a further development, provision is also made for the angle member to form a limiting stop, which restricts the movement of the inner ball-guiding rail supporting the drawer when the latter is pushed in.

125 Finally, the invention is also concerned with a cabinet in which the control rail may be accommodated in a flush position in a groove-like or channel-like guideway of the housing.

Provision may be made here for the outer ball-guiding rail of the telescopic double pull-out device to have, at its forward end, a tongue-like extension which is, for example, formed thereon in one piece and which engages as a safety member over the open side of the channel-like guideway.

One form of the invention is illustrated in the drawings by way of example. In the drawings:

Figure 1 is a perspective view of a cabinet for accommodating a relatively large number of drawers arranged one above the other;

Figure 2 shows, to a larger scale, that partial region, indicated by II in Figure 1, of a telescopic double pull-out unit having ball guideways and serving as a support for a drawer;

Figure 3 also represents to a larger scale that part section of the cabinet which is characterised in Figure 1 by III;

Figure 4 is a cross-section through a telescopic double pull-out unit with ball guideways, installed between the housing of the cabinet and a drawer;

Figure 5 is a plan view of the arrangement according to Figure 4; and

Figure 6 is a perspective view of a detail in the region of the operative connection between a telescopic double pull-out unit and that control rail for the pull-out lock which is fitted into the housing of the cabinet.

Represented in Figure 1 is a cabinet 1, in the housing 2 of which a relatively large number of drawers 3 can be arranged one above the other.

In this arrangement, each separate drawer 3 is held by means of two telescopic double pull-out devices 4 with ball guideways in the housing 2 so that it can be moved in and out, and in fact in such a manner that it is able, firstly, to be completely accommodated inside the housing 2, whereas, secondly, it may however also be moved completely out of the said housing 2.

The telescopic double pull-out units 4 having ball guideways are, firstly, by means of their outer ball-guiding rail 5, releasably suspended in the side walls of the housing 2, while, secondly, the drawers 3 can also be releasably suspended in their inner ball-guiding rail 6. In order to achieve this result, and as will be seen more particularly from Figure 4, the outer ball-guiding rails 5 are provided with hooks 7, which are capable of being suspended from openings 8 in the walls of the housing 2, while the inner ball-guiding rails 6 have corresponding hooks 9, which are adapted to be fitted into recesses or openings 10 in the drawers 3.

It is also to be seen from Figure 4 that the telescopic double pull-out units 4, with ball guides alongside the outer ball-guiding rail 5 and the inner ball-guiding rail 6, also comprise a duplicated ball-guiding slide 11, by means of which the two ball-guiding rails 5 and 6 are displaceably connected so as to move easily relatively to one another by way of four interposed rows of balls 12.

The ball-guiding rails 5 and 6 respectively always have a substantially open C-shaped cross-section and are provided with their open

longitudinal sides facing one another. The flanged parts of the outer ball guideway 5 form in this case ball-guiding channels 13, while the corresponding flanged parts of the inner ball-guiding rail 6 are formed as ball-guiding channels 14. The ball-guiding slide 11 has an approximately double-T-shaped form and engages with its flanges into the open longitudinal sides of the outer ball-guiding rail 5 and the inner ball-guiding rail 6, these latter likewise forming ball-guiding channels 15 and 16.

Arranged to be vertically movable inside the housing 2 of the cabinet 1 in a preformed groove 17 is a control rail 18 which, under the effect of its own weight and/or as a consequence of an additional spring force, is normally held in its lower "pushed" position. Associated on this control rail 18 and with each drawer 3 is, firstly, a control cam 19 and, secondly, a locking cam 20. Both the control cams 19 and the locking cams 20 are in this case fixed rigidly on the control rail 18. The control cams 19 here have a longer length dimension than the locking cams 20 and are in addition provided so as to be disposed one above the other at a pre-determined spacing 21.

Associated with the control cam or boss 19 of the control rail 18 and at the forward end of the inner ball-guiding rail 6 of the telescopic double pull-out units 4 on the one side thereof and as an extension of the upper ball-guiding channel 14 is a shaped extension 22 which is cranked in its guiding plane, the said extension being shaped with an approximately snout-like or trunk-like form in a downward direction. The shaped extension 22 here has a downwardly open channel-like or U-shaped section of high dimensional strength and forms a control surface for the adjacent control cam or boss 19, by which surface the control rail 18 is lifted against its weight effect and/or restoring spring force, as soon as only one of the drawers 3 undertakes an opening movement.

On the other hand, however, the inner ball-guiding rail 6 of each telescopic double pull-out unit 4 is also still provided with a tongue 23 cranked sideways from its guiding plane, which tongue has the form of an angle member and carries a leaf spring 24, which is able to have an operative connection as a locking stop or abutment with the associated locking boss or cam 20 of the control rail 18.

The leaf spring 24 is so shaped in this case that it projects sideways relatively to the outer ball-guiding rail 5, but is capable of deflecting towards the inner ball-guiding rail 6. It thereby becomes possible for a drawer 3 which is not entirely in the closed position to still be pushed into its completely closed position, even if another drawer 3 has been opened already, and, as a consequence, all locking bosses 20 are set by the control rail 18 in their locking position.

While the leaf spring 24 forms the actual locking stop or abutment against opening of the drawers, the angle member 23, in conjunction with the ball-guiding slide 11, still serves as a limiting stop, which restricts the movement of the

inner ball-guiding rail 6 carrying the drawer 3 in the position in which the drawer 3 is pushed in.

It is possible to see from Figure 3 how the shaped extensions 22 cranked in the form of a trunk or snout and forming the control surfaces of the inner ball-guiding rails 6 cooperate with the control bosses 19 of the control rail 18. However, it is also to be seen from Figure 3 the manner in which those leaf springs 24 of the inner ball-guiding rails 6 which serve as locking stops cooperate with the locking cams or bosses 20 of the control rail 18.

As already mentioned, the control rail 18 is guided and accommodated in a flush manner in a groove or channel 17 of the housing 2 of the cabinet 1.

So that the control rail 18 is held in a very simple manner in this channel 17, as soon as the telescopic double pull-out units 4 are fitted into the housing 2 of the cabinet, the outer ball-guiding rails 5 can be provided at their front ends with tongue-like extensions 25 which are advantageously formed in one piece thereon, as will become apparent from Figures 5 and 6. In this case, the tongue-like extensions engage over the open side of the groove or channel 17 in the side wall of the housing 2 and, as a result, secure the control rail 18 in a simplest possible manner in its fitted position.

30 CLAIMS

1. Cabinet or the like with a relatively large number of drawers which are arranged one above the other and of which each is held so that it can be moved in and out of a housing by two telescopic double pull-out units with ball guideways in the housing, the housing having arranged therein a pull-out lock which consists of at least one control rail adjustable transversely of the direction of movement of the drawers and having control cams and locking cams for each drawer and also of control surfaces and locking abutments or stops movable with each drawer, the control rail being displaceable by the opening of the drawer through the control surfaces and control cams associated with the latter and being

adjustable with its locking cams before the locking stops of all other drawers, and wherein at least one of the inner ball-guiding rails of the telescopic double pull-out slides which carry a drawer is provided at its forward end, firstly, as an extension of a ball-guiding channel, with a shaped extension which is cranked in its guiding plane as a control surface and, secondly, with a tongue cranked sideways from its guiding plane as a locking stop.

2. Cabinet or the like according to claim 1, wherein the cranked shaped extension forming the control surface is shaped so as to bend downwardly in snout-like form.

3. Cabinet or the like according to claim 1 or 2, wherein the cranked shaped extension has a downwardly open channel-like or U-shaped section, while the tongue forming the locking stop consists of a rigid angle member and a leaf spring which is connected fast to said member, projects laterally towards the outer ball-guiding rail, but is yieldable towards the inner ball-guiding rail.

4. Cabinet or the like according to claim 3 wherein the angle member forms a limiting stop, which restricts the movement of the inner ball-guiding rails supporting the drawer in the inserted position of the drawer with respect to a ball-guiding slide.

5. Cabinet or the like according to any one of claims 1 to 4, wherein the control cams of the control rail have a greater length dimension than the locking cams.

6. Cabinet or the like according to any one of claims 1 to 5, wherein the control rail is accommodated flush in a channel-like guideway of the housing, and the outer ball-guiding rails of the telescopic double pull-out slides have at their forward end a tongue-like extension which engages over the open side of the channel-like guideway as a safety member.

7. Cabinet or the like according to claim 6 wherein the tongue-like extension is formed in one piece with a pull-out slide.

8. A cabinet with a relatively large number of drawers substantially as shown in the accompanying drawings and described herein with reference thereto.